

WHAT IS CLAIMED IS:

1. A method of recommending items to users from a database of items, the method comprising:
- 5 providing a table that maps items from the database to respective sets of similar items, wherein the table includes values that indicate degrees of similarity between specific items, said values reflecting an automated analysis of historical data indicating item interests of each of a plurality of users; and
- 10 using the table to provide personalized item recommendations to each of a plurality of target users, wherein the personalized item recommendations are generated for a target user by at least:
- 15 identifying multiple items selected by the target user; and  
selecting similar items from the table to recommend to the target user such that a determination of whether to recommend a particular similar item takes into consideration a degree to which that similar item is similar to each of the multiple items selected by the target user, as indicated by the table.
2. The method of Claim 1, wherein the items are products represented within an online catalog.
3. The method of Claim 1, wherein identifying multiple items selected by the target user consists of identifying items currently in an electronic shopping cart of the target user.
4. The method of Claim 3, further comprising incorporating the selected similar items into a shopping cart page which indicates contents of the electronic shopping cart.
- 25 5. The method of Claim 1, wherein identifying multiple items selected by the target user comprises identifying items purchased by the target user.
6. The method of Claim 1, wherein identifying multiple items selected by the target user comprises identifying items viewed by the target user during online browsing.
- 30 7. The method of Claim 1, wherein a similar item not included within the set of similar items for a user-selected item is treated as having a degree of similarity of zero with respect to that user-selected item.

8. The method of Claim 1, further comprising generating the table, including the values, by collectively analyzing item selection histories of the plurality of users to determine, for each of multiple item pairs item\_A, item\_B, a frequency with which users who selected item\_A also selected item\_B.

5 9. The method of Claim 1, further comprising generating the table, including the values, by collectively analyzing item purchase histories of the plurality of users to determine, for each of multiple item pairs item\_A, item\_B, a frequency with which users who purchased item\_A also purchased item\_B.

10 10. The method of Claim 1, further comprising generating the table, including the values, by collectively analyzing shopping cart histories of the plurality of users to determine, for each of multiple item pairs item\_A, item\_B, a frequency with which users who placed item\_A in a shopping cart also placed item\_B in the shopping cart.

15 11. The method of Claim 1, wherein selecting similar items to recommend to the target user comprises inhibiting recommendations of similar items already purchased by the user.

12. The method of Claim 1, wherein the table further reflects item similarities determined by an automated content based analysis of item descriptions.

20 13. The method of Claim 1, wherein the personalized item recommendations are generated for the target user in real time.

14. The method of Claim 1, wherein the items include at least one of the following: book titles, music titles, video titles.

15. The method of Claim 1, wherein the items include downloadable content.

25 16. The method of Claim 1, wherein the table is a B-tree data structure.

17. A system for recommending items to users from a database of items, the system comprising:

30 a table that maps items from the database to sets of related items, wherein the table includes values that indicate degrees of relatedness between specific items, said values reflecting an automated analysis of historical data indicating item interests of a plurality of users; and

a computer system programmed to use the table to provide personalized item recommendations to target users, wherein the computer system generates personalized item recommendations for a target user by at least:

identifying multiple items selected by the target user; and

selecting related items to recommend to the target user such that a related item is selected to recommend based at least in part upon a degree to which that related item is related to each of the multiple items selected by the target user, as indicated within the table.

18. The system of Claim 17, wherein the items are products represented within an online catalog.

19. The system of Claim 17, wherein the computer system identifies the multiple items selected by the target user by identifying items currently in an electronic shopping cart of the target user.

20. The system of Claim 19, wherein the computer system incorporates the selected related items into a shopping cart page which indicates contents of the electronic shopping cart.

21. The system of Claim 17, wherein the computer system identifies the multiple items selected by the target user at least by identifying items purchased by the target user.

22. The system of Claim 17, wherein the computer system identifies the multiple items selected by the target user at least by identifying items viewed by the target user during online browsing.

23. The system of Claim 17, wherein a related item not included in the set of similar items for a user-selected item is treated as having a degree of relatedness of zero with respect to that user-selected item.

24. The system of Claim 17, further comprising a program module which generates the table, including the values stored therein, by collectively analyzing item selection histories of the plurality of users to determine, for each of multiple item pairs item\_A, item\_B, a frequency with which users who selected item\_A also selected item\_B.

25. The system of Claim 17, further comprising a program module which generates the table, including the values, by collectively analyzing item purchase

histories of the plurality of users to determine, for each of multiple item pairs item\_A, item\_B, a frequency with which users who purchased item\_A also purchased item\_B.

26. The system of Claim 17, further comprising a program module which generates the table, including the values, by collectively analyzing shopping cart histories of the plurality of users to determine, for each of multiple item pairs item\_A, item\_B, a frequency with which users who placed item\_A in a shopping cart also placed item\_B in the shopping cart.

27. The system of Claim 17, wherein the computer system is programmed to inhibit recommendations of items already purchased by the target user.

28. The system of Claim 17, wherein the table further reflects item relationships determined by an automated content-based analysis of item descriptions.

29. The system of Claim 17, wherein the computer system generates the personalized item recommendations for the target user in real time.

30. The system of Claim 17, wherein the items include at least one of the following: book titles, music titles, video titles.

31. The system of Claim 17, wherein the items include downloadable content.

32. The system of Claim 17, wherein the table is stored as a B-tree data structure.

33. A method of recommending items to users from a database of items, the method comprising:

for at least one type of user action which evidences a user's interest in an item, maintaining, for each of a plurality of users, a history of the items for which the at least one type of action was performed by the user, to thereby generate a plurality of user-specific histories;

in an off-line processing mode, generating a table that maps each of a plurality of items to a respective set of similar items, wherein generating the table comprises determining, for each of multiple item pairs, a frequency with which both items of the pair occur within a same user-specific history of the plurality of user-specific histories; and

providing recommendations to a target user by at least (a) identifying multiple items selected by the target user, and (b) selecting additional items to

recommend to the target user based at least in part on whether an additional item is similar to more than one of the items selected by the target user, as reflected in the table.

34. The method of Claim 33, wherein the items are products represented within an online catalog.

35. The method of Claim 34, wherein the at least one type of user action comprises a purchase of a product.

36. The method of Claim 34, wherein the at least one type of user action comprises selection of a product for placement in an electronic shopping cart.

37. The method of Claim 34, wherein providing recommendations to a target user comprises inhibiting recommendations of products already purchased by the target user.

38. The method of Claim 33, wherein the user-specific histories include histories of item viewing activities of users.

39. The method of Claim 33, wherein the table further reflects content-based similarities.

40. The method of Claim 33, wherein an additional item is selected to recommend based further upon a degree of similarity to an item selected by the target user, as reflected by a similarity value stored in the table.

41. The method of Claim 33, wherein identifying multiple items selected by the target user comprises identifying items currently in an electronic shopping cart of the target user.

42. The method of Claim 41, wherein providing recommendations to the target user further comprising incorporating the additional items into a shopping cart page which indicates contents of the electronic shopping cart.

43. The method of Claim 33, wherein identifying multiple items selected by the target user comprises identifying items purchased by the target user.

44. The method of Claim 33, wherein identifying multiple items selected by the target user comprises identifying items viewed by the target user during browsing of an online catalog.

45. The method of Claim 33, wherein the items include at least one of the following: book titles, music titles, video titles.

44. 46. The method of Claim 33, wherein the items include downloadable content.

43. 47. The method of Claim 33, wherein (a) and (b) are performed in an online processing mode to provide instant recommendations to the target user.

5 116. 48. A computer-implemented method of recommending items to a target user, comprising:

identifying a plurality of items that are currently in an electronic shopping cart of the target user;

10 using the plurality of items in the electronic shopping cart to identify a set of additional items that are predicted to be of interest to the user, wherein an additional item is selected for inclusion in the set based at least in-part upon whether that additional item is similar to more than one of the plurality of items in the electronic shopping cart; and

15 recommending at least some of the additional items in the set to the target user when the target user accesses the electronic shopping cart.

17. 49. The method of Claim 48, wherein the method is performed substantially in real time when the target user accesses the electronic shopping cart.

18. 50. The method of Claim 48, wherein an additional item is selected for inclusion in the set based further upon degrees of similarity between the additional item and each of the items in the electronic shopping cart.

19. 51. The method of Claim 50, wherein the degrees of similarity are based at least in part on an collective analysis of item selection histories of a community of users.

20 20. 52. The method of Claim 50, wherein the degrees of similarity are based at least in part on a content-based analysis of item descriptions within a database.

21. 53. The method of Claim 48, wherein recommending at least some of the additional items to the target user comprises displaying representations of the additional items within a shopping cart page.

22. 54. The method of Claim 48, wherein recommending at least some of the additional items to the target user comprises filtering out at least one additional item already purchased by the target user.